the demonstration required by this section:

(1) Duly executed certifications required under paragraph (a) of this section;

(2) Exhibits containing the basis for the certifications required under paragraph (a) of this section (including those factual and analytical materials deemed by the petitioner to be sufficient to support the granting of this exemption);

(3) A description of the fuel mixture, including component fuels and the percentage of each such fuel to be used; and

(4) Environmental impact analysis as required under § 503.13 of these regulations.

(c) *Solar mixtures.* OFE will grant a permanent mixtures exemption for the use of a mixture of solar energy (including wind, tide, and other intermittent sources) and petroleum or natural gas, where:

(1) Solar energy will account for at least 20 percent of the total annual Btu heat input, of the primary energy sources of the unit; and

(2) Petitioner meets the eligibility and evidentiary requirements of paragraphs (a) and (c) of this section.

[46 FR 59903, Dec. 7, 1981, as amended at 54 FR 52896, Dec. 22, 1989]

§§ 503.39–503.44 [Reserved]

PART 504—EXISTING POWERPLANTS

Sec.

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APPENDIX I TO PART 504—PROCEDURES FOR THE COMPUTATION OF THE REAL COST OF CAPITAL
APPENDIX II TO PART 504—FUEL PRICE COMPUTATION

AUTHORITY: Department of Energy Organization Act, Pub. L. 95–91, 91 Stat. 565 (42 U.S.C. § 7101 *et seq.*); Powerplant and Industrial Fuel Use Act of 1978, Pub. L. 95–620, 92 Stat. 3289 (42 U.S.C. 8301 *et seq.*); Energy Security Act, Pub. L. 96–294, 94 Stat. 611 (42 U.S.C. 8701 *et seq.*); E.O. 1209, 42 FR 46267, Sept. 15, 1977.

SOURCE: 45 FR 53692, Aug. 12, 1980, unless otherwise noted.

(Approved by the Office of Management and Budget under control number 1903–0075. See 46 FR 63209, Dec. 31, 1981)

§ 504.2 Purpose and scope.

(a) Sections 504.5, 504.6, and 504.8, set forth the prohibitions that OFP, pursuant to section 301 of the Act, as amended, may impose upon existing powerplants after a review of the certification and prohibition order compliance schedule submitted by the owner or operator of a powerplant. Sections 504.5 and 504.8 are explanatory sections, and § 504.6 provides the informational requirements necessary to support the certification.

(b) Sections 504.6 and 504.7, set forth the prohibitions that OFP may impose upon certain electing powerplants, pursuant to former section 301 (b) and (c) of FUA, where OFP can make the findings as to the unit's technical capability and financial feasibility to use coal or another alternate fuel as a primary energy source. The prohibitions may be made to apply to electing powerplants unless an exemption is granted by OFP under the provisions of the Final Rule for Existing Facilities (10 CFR parts 500, 501 and 504) published at 45 FR 53682, Aug. 12, 1980 and 46 FR 59872, Dec. 7, 1981. Any person who owns, controls, rents or leases an existing electing powerplant may be subject to the prohibitions imposed by and the sanctions provided for in the Act or these regulations, if OFP can make the findings required by former section 301 (b) and (c) of FUA.

(Department of Energy Organization Act, Pub. L. 95–91, 91 Stat. 565 (42 U.S.C. 7101 *et seq.*); Powerplant and Industrial Fuel Use Act of 1978, Pub. L. 95–620, 92 Stat. 3269 (42 U.S.C. 8301 *et seq.*); Omnibus Budget Reconciliation Act of 1981, Pub. L. 97–35; E.O. 12009, 42 FR 46267, Sept. 15, 1977)

[47 FR 50849, Nov. 10, 1982]

§§ 504.3–504.4 [Reserved]

§ 504.5 Prohibitions by order (certifying powerplants under section 301 of FUA, as amended).

(a) In the case of existing powerplants, OFP may prohibit, in accordance with section 301 of the Act, as amended, the use of petroleum or natural gas as a primary energy source where the owner or operator of the powerplant presents a complete certification concurred in by OFP. The certification, which may be presented at any time, pertains to the unit's technical capability and financial feasibility to use coal or another alternate fuel as a primary energy source in the unit. The informational requirements necessary to support a certification are contained in §504.6 of these regulations. A prohibition compliance schedule which meets the requirements of §504.5(d) shall also be submitted.

(b) If OFP concurs with the certification, a prohibition order on the powerplant's use of petroleum or natural gas will be issued following the procedure outlined in §501.52 of these regulations.

(c) The petitioner may amend its certification at any time prior to the effective date of the prohibitions contained in the final prohibition order in order to take into account changes in relevant facts and circumstances by following the procedure contained in §501.52(d).

(d) *Prohibition order compliance schedule.* The certification described above, which forms the basis for the issuance of a prohibition order to a powerplant, shall include a prohibition order compliance schedule. The compliance schedule should contain the following:

(1) A schedule of progressive events involved in the conversion project, including construction of any facilities for the production of fuel or fuel handling equipment, and contracts for the purchase of alternate fuels, and estimated date of compliance with the applicable prohibitions of the Act; and

(2) A schedule indicating estimated dates for obtaining necessary federal, state, and local permits and approvals. Any prohibition order issued under the certification provisions of §§504.5, 504.6, and 504.8 will be subject to appropriate conditions subsequent so as to delay the effectiveness of the prohibitions contained in the final prohibition order until the above events or permits have occurred or been obtained.

(Approved by the Office of Management and Budget under control number 1903–0077)

(Department of Energy Organization Act, Pub. L. 95–91 (42 U.S.C. 7101 *et seq.*); Energy Supply and Environmental Coordination Act of 1974, Pub. L. 93–319, as amended by Pub. L. 94–163, Pub. L. 95–70, and Pub. L. 95–620 (15 U.S.C. 719 *et seq.*); Powerplant and Industrial Fuel Use Act of 1978, Pub. L. 95–620, as amended by Pub. L. 97–35 (42 U.S.C. 8301 *et seq.*); Omnibus Budget Reconciliation Act of 1981, Pub. L. 97–35)

[47 FR 17044, Apr. 21, 1982]

§ 504.6 Prohibitions by order (case-by-case).

(a) OFP may prohibit, by order, the use of natural gas or petroleum as a primary energy source in existing powerplants under certain circumstances. In the case of certifying powerplants under section 301 of the Act, as amended, the petitioner must present evidence to support the certification, required by §504.6 (c), (d), (e), and (f). In the case of electing powerplants, OFP must make the following findings required by §504.6 (c), (d), (e), and (f), in order to issue a prohibition order to the unit, pursuant to former section 301 (b) or (c):

(1) The unit currently has, or previously had, the technical capability to use an alternate fuel as a primary energy source;

(2) The unit has this technical capability now, or it could have the technical capability without:

(i) A substantial physical modification of the unit; or

(ii) A substantial reduction in the rated capacity of the unit; and

(3) It is financially feasible for the unit to use an alternate fuel as its primary energy source.

(b) In the case of electing powerplants, OFP must make a proposed finding regarding the technical capability of a unit to use alternate fuel as identified in paragraph (a) (1) of this section prior to the date of publication of the notice of the proposed prohibition. OFP will publish this finding in

The FEDERAL REGISTER along with the notice of the proposed prohibition.

(c) *Technical capability.* (1) In the case of electing and certifying powerplants, OFP will consider ''technical capability'' on a case-by-case basis in order to make the required finding. In the case of a certifying powerplant, the powerplant should present information to support the certification relevant to the considerations set forth below. OFP will consider the ability of the unit, from the point of fuel intake to physically sustain combustion of a given fuel and to maintain heat transfer.[2]

(2) OFP considers that a unit ''had'' the technical capability to use an alternate fuel if the unit was once able to burn that fuel (regardless of whether the unit was expressly designed to burn that fuel or whether it ever actually did burn it), but is no longer able to do so at the present due to temporary or permanent alterations to the unit itself.[3]

(3) A unit ''has'' the technical capability to use an alternate fuel if it can burn an alternate fuel, notwithstanding the fact that adjustments must be made to the unit beforehand or that pollution control equipment may be required to meet air quality requirements.[4]

(d) *Substantial physical modification.* In the case of electing and certifying powerplants, OFP will make its determination on whether a physical modification to a unit is ''substantial'' on a case-by-case basis. In the case of certifying powerplants, OFP will consider the factors set forth below for the purpose of concurrence in the certification. OFP will consider physical modifications made to the unit as ''substantial'' where warranted by the magnitude and complexity of the engineering task or where the modification would impact severely upon operations at the site.[5] OFP will not, however, assess physical modification on the basis of cost.

(e) *Substantial reduction in rated capacity.* In the case of electing and certifying powerplants, OFP will make this determination on the basis of the following factors. A certifying powerplant should present information to support its certification regarding these factors in order for OFP to make its review for concurrence.

(1) OFP regards a unit's derating of 25 percent or more, as a result of converting a unit from oil or gas to an alternate fuel, as substantial.

(2) OFP will presume that a derating of less than 10 percent, as a result of converting a unit from oil or gas to an alternate fuel, is not substantial unless

[2] OFP will not ordinarily consider the nature or absence of appurtenances outside the unit. For example, OFP will examine the furnace configuration and ash removal capability but will not normally consider the need to install pollution control equipment as a measure of technical capability. Furthermore, OFP will not normally conclude that the absence of fuel handling equipment, such as conveyor belts, pulverizers, or unloading facilities, bears on the issue of a unit's ''technical capability'' to burn an alternate fuel.

[3] For example, a unit which at one time burned solid coal but which could no longer do so because its coal firing ports and sluicing channels had been cemented over, would be classified as having ''had'' the technical capability to use coal. (The question of whether it again ''could have'' such capability without ''substantial physical modification'' is a separate and additional question.)

[4] A unit designed to burn natural gas shall be presumed to have the technical capability to burn a synthetic fuel such as medium Btu gas from coal (assuming such gas is available unless convincing evidence to the contrary is submitted in rebuttal). Also a unit designed to burn oil may, depending upon the chemical characteristics, be a unit that ''has'' the technical capability to burn liquefied coal. The fact that certain adjustments may be necessary does not render this a ''hypothetical'' as opposed to a ''real'' capability. Even an oil fired unit converting from the use of #2 distillate to #6 residual oil may be required to adjust or replace burner nozzles and add soot blowers.

[5] Generally, modification of a unit to burn coal or an alternate fuel will be considered insubstantial if significant alterations to the boiler, such as a change to the furnace configuration or a complete respacing of the tubes, are not required. Minor alterations such as replacement of burners or additions of soot blowers, and additions or alterations outside the boiler, shall not cause the modification to be substantial.

convincing evidence to the contrary is submitted in rebuttal.[6]

(3) OFP will assess units for which a derating is claimed of 10 percent or more, but less than 25 percent, on a case-by-case.

(4) In assessing whether a unit's derating is not substantial, OFP will consider the impact of a reduction in rated capacity of the unit taking into consideration all necessary appurtenances such as air pollution control equipment required to burn an alternate fuel in compliance with environmental requirements expected to be applicable at the date the prohibitions contained in the final prohibition order become effective. However, the potential order recipient may raise in rebuttal the impact of derating on the site at which the unit is located and on the system as well as on the unit itself, if under paragraph (e)(2), or case-by-case, if under paragraph (e)(3) of this section.

(f) *Financial feasibility.* In the case of certifying and electing powerplants, OFP will make this finding based on the following considerations. A certifying powerplant should present information to support its certification relevant to these considerations in order for OFP to make its review for concurrence. Conversion of a unit to burn coal or an alternate fuel shall be deemed financially feasible if the firm has the actual ability to obtain sufficient capital to finance the conversion, including all necessary land, coal and ash handling equipment, pollution control equipment, and all other necessary expenditures, without violating legal restrictions on its ability to raise debt or equity capital, unreasonably diluting shareholder equity, or unreasonably adversely affecting its credit rating. OFP will consider any economic or financial factors presented by the proposed order recipient in determining the firm's ability or inability to finance the conversion including, but not limited to, the following:

(1) The required coverage ratios on the firm's debt and preferred stock;

(2) The firm's investment program; and

(3) The financial impact of the conversion, including other conversions which are or may be undertaken voluntarily by the proposed order recipient or imposed upon the recipient's system by the Act, and including pending or planned construction or reconstruction of alternate-fuel-fired plants and plants exempt from FUA prohibitions.[7] Where helpful in clarifying the long-term financial feasibility of a conversion, DOE may analyze the economic benefits anticipated from operation of the converted unit or units using coal or other alternate fuel relative to those from continued operation using petroleum or natural gas.

(Approved by the Office of Management and Budget under control number 1903–0077)

(Energy Supply and Environmental Coordination Act of 1974, Pub. L. 93–319, as amended by Pub. L. 94–163, Pub. L. 95–70, and 15 U.S.C. 719 *et seq.;* Department of Energy Organization Act, Pub. L. 95–91, 91 Stat. 565 (42 U.S.C. 7101 *et seq.*); Powerplant and Industrial Fuel Use Act of 1978, Pub. L. 95–620, 92 Stat. 3269 (42 U.S.C. 8301 *et seq.*); Omnibus Budget Reconciliation Act of 1981 (Pub. L. 97–35); E.O. 12009, 42 FR 46267, Sept. 15, 1977)

[45 FR 53692, Aug. 12, 1980, as amended at 47 FR 17044, Apr. 21, 1982; 47 FR 50849, Nov. 10, 1982]

§ 504.7 Prohibition against excessive use of petroleum or natural gas in mixtures—electing powerplants.

(a) In the case of electing powerplants, if OFP finds that it is technically and financially feasible for a unit to use a mixture of petroleum or natural gas and an alternate fuel as its primary energy source, OFP may prohibit, by order, the use in that unit of

[6] For example, units that are the subject of a prohibition order will not have installed any operating air pollution control equipment sufficient to burn coal in compliance with applicable environmental equipments. The installation and use of air pollution control equipment alone can, in many cases, produce a derating. Moreover, the shift to coal itself will, because of differences in energy density and fuel flow characteristics, typically involve some derating.

[7] OFP will not require the proposed order recipient to cancel or defer construction or reconstruction of any alternate-fuel-fired facility, or any facility exempt from the prohibitions of the Act, for which a decision to finance such facility has been made by the appropriate company official before the publication of the prohibition order. The proposed order recipient may choose to cancel or defer any such facility.

petroleum or natural gas, or both, in amounts exceeding the minimum amount necessary to maintain reliability of operation consistent with maintaining reasonable fuel efficiency of the mixture.

(b) In making the technical feasibility finding required by former section 301 (b) and (c) of the Act and paragraph (a) of this section, OFP may weigh ''physical modification'' or ''derating of the unit,'' but these considerations, by themselves, will not control the technical feasibility finding. A technical feasibility finding might be made notwithstanding the need for substantial physical modification. The economic consequences of a substantial physical modification are taken into account in determining financial feasibility.

(Energy Supply and Environmental Coordination Act of 1974, Pub. L. 93–319, as amended by Pub. L. 94–163, Pub. L. 95–70, and 15 U.S.C. 719 *et seq.;* Department of Energy Organization Act, Pub. L. 95–91, 91 Stat. 565 (42 U.S.C. 7101 *et seq.*); Powerplant and Industrial Fuel Use Act of 1978, Pub. L. 95–620, 92 Stat. 3269 (42 U.S.C. 8301 *et seq.*); Omnibus Budget Reconciliation Act of 1981 (Pub. L. 97–35); E.O. 12009, 42 FR 46267, Sept. 15, 1977)

[47 FR 17045, Apr. 21, 1982, and 47 FR 50850, Nov. 10, 1982]

§ 504.8 Prohibitions against excessive use of petroleum or natural gas in mixtures—certifying powerplants.

(a) In the case of certifying powerplants, OFP may prohibit the use of petroleum or natural gas in such powerplant in amounts exceeding the minimum amount necessary to maintain reliability of operation consistent with maintaining the reasonable fuel efficiency of the mixture. This authority is contained in section 301(c) of the Act, as amended. The owner or operator of the powerplant may certify at any time to OFP that it is technically capable and financially feasible for the unit to use a mixture of petroleum or natural gas and coal or another alternate fuel as a primary energy source. In assessing whether the unit is technically capable of using a mixture of petroleum or natural gas and coal or another alternate fuel as a primary energy source, for purposes of this section, the extent of any physical modification necessary to convert the unit and any concomitant reduction in rated capacity are not relevant factors. So long as a unit as proposed to be modified would be technically capable of using the mixture as a primary energy source under § 504.6(c), this certification requirement shall be deemed met. The criteria for certification of financial feasibility are found at § 504.6(f). In addition, the powerplant's owner or operator must submit a prohibition compliance schedule, which meets the requirements of § 504.5(d).

(b) If OFP concurs with the certification, a prohibition order against the unit's excessive use of petroleum or natural gas in the mixture will be issued following the procedure outlined in § 501.52 of these regulations.

(c) The petitioner may seek to amend its certification in order to take into account changes in relevant facts and circumstances by following the procedure contained in § 501.52(d).

NOTE: The authority of OFP implemented under this section should not be confused with the other two fuel mixture provisions of these regulations. One is the general requirement that petitioners for permanent exemptions demonstrate that the use of a mixture of natural gas or petroleum and an alternate fuel is not economically or technically feasible (See § 504.15). The second is the permanent fuel mixtures exemption itself (See § 504.56).

(Approved by the Office of Management and Budget under control number 1903–0077)

(Department of Energy Organization Act, Pub. L. 95–91 (42 U.S.C. 7101 *et seq.*); Energy Supply and Environmental Coordination Act of 1974, Pub. L. 93–319, as amended by Pub. L. 94–163, Pub. L. 95–70, and Pub. L. 95–620 (15 U.S.C. 719 *et seq.*); Powerplant and Industrial Fuel Use Act of 1978, Pub. L. 95–620, as amended by Pub. L. 97–35 (42 U.S.C. 8301 *et seq.*); Omnibus Budget Reconciliation Act of 1981, Pub. L. 97–35)

[47 FR 17045, Apr. 21, 1982]

§ 504.9 Environmental requirements for certifying powerplants.

Under §§ 501.52, 504.5 and 504.6 of these regulations, OFP may prohibit, in accordance with section 301 and section 303 (a) or (b) of FUA, as amended, the use of natural gas or petroleum, or both, as a primary energy source in any certifying powerplant. Under sections 301(c) and 303(a) of FUA, as amended, and §§ 501.52, 504.6, and 504.8 of

these regulations, OFP may prohibit the excessive use of natural gas or petroleum in a mixture with an alternate fuel as a primary energy source in a certifying powerplant.

(a) *NEPA compliance.* Except as provided in paragraph (c) of this section, where the owner or operator of a powerplant seeks to obtain an OFP prohibition order through the certification procedure, and did not hold either a proposed prohibition order under former section 301 of FUA or pending order under section 2 of ESECA, it will be responsible for the costs of preparing any necessary Environmental Assessment (EA) or Environmental Impact Statement (EIS) arising from OFP's obligation to comply with NEPA. The powerplant owner or operator shall enter into a contract with an independent party selected by OFP, who is qualified to conduct an environmental review and prepare an EA or EIS, as appropriate, and who does not have a financial or other interest in the outcome of the proceedings, under the supervision of OFP. The NEPA process must be completed and approved before OFP will issue a final prohibition order based on the certification.

(b) *Environmental review procedure.* Except as provided in paragraph (c) of this section, environmental documents, including the EA and EIS, where necessary, will be prepared utilizing the process set forth above. OFP, the powerplant owner or operator and the independent third party shall enter into an agreement for the owner or operator to engage and pay directly for the services of the qualified third party to prepare the necessary documents. The third party will execute an OFP prepared disclosure document stating that he does not have any conflict of interest, financial or otherwise, in the outcome of either the environmental process or the prohibition order proceeding. The agreement shall outline the responsibilities of each party and his relationship to the other two parties regarding the work to be done or supervised. OFP shall approve the information to be developed and supervise the gathering, analysis and presentation of the information. In addition, OFP will have the authority to approve and modify any statement, analysis, and conclusion contained in the third party prepared environmental documents.

(c) *Financial hardship.* Whenever the bona fide estimate of the costs associated with NEPA compliance, if borne by the powerplant owner or operator, would make the conversion financially infeasible, OFP may waive the requirement set forth in paragraphs (a) and (b) of this section and perform the necessary environmental review.

(Approved by the Office of Management and Budget under control number 1903–0077)

(Department of Energy Organization Act, Pub. L. 95–91 (42 U.S.C. 7101 *et seq.*); Energy Supply and Environmental Coordination Act of 1974, Pub. L. 93–319, as amended by Pub. L. 94–163, Pub. L. 95–70, and Pub. L. 95–620 (15 U.S.C. 719 *et seq.*); Powerplant and Industrial Fuel Use Act of 1978, Pub. L. 95–620, as amended by Pub. L. 97–35 (42 U.S.C. 8301 *et seq.*); Omnibus Budget Reconciliation Act of 1981, Pub. L. 97–35)

[47 FR 17046, Apr. 21, 1982]

APPENDIX I TO PART 504—PROCEDURES FOR THE COMPUTATION OF THE REAL COST OF CAPITAL

(a) The firm's real after-tax weighted average marginal cost of capital (K) is computed with equation 1.

EQ 1

$$K = W_d \left[\frac{\hat{R}_d\,(1-t)}{1-f_d} - INF\right] + W_p \left[\frac{\hat{R}_p}{1-f_p} - INF\right] + W_e \left[\frac{\hat{R}_e}{1-f_e} - INF\right]$$

The terms in equation 1 are defined as follows:

W_d = Fraction of existing capital structure which is debt.
W_p = Fraction of existing capital structure which is preferred equity.
W_e = Fraction of existing capital structure which is common equity and retained earnings.
$\hat{R}_d$ = Predicted nominal cost of long term debt expressed as a fraction.
$\hat{R}_p$ = Predicted nominal cost of preferred stock expressed as a fraction.
$\hat{R}_e$ = Predicted nominal cost of common stock expressed as a fraction.
INF=Percentage change in the GNP implicit price deflator over the past 12 months expressed as a fraction.
f_d = Flotation cost of debt expressed as a fraction.
f_p = Flotation cost of preferred stock expressed as a fraction.
f_e = Flotation cost of common stock expressed as a fraction.
t=Marginal federal income tax rate for the current year.

(b) *Information on parameters used in Equation 1.* (1) The parameters used in equation 1 will be the best practicable estimates. They will be obtained from the firm, accepted rating services (e.g., Standard & Poors, Moody's), government publications, accepted financial publications, annual financial reports and statements of firms, and investment bankers.

(2) The predicted nominal cost of debt ($\hat{R}_d$) may be estimated by determining the current average yield on newly issued bonds—industrial or utility as appropriate—which have the same rating as the firm's most recent debt issue.

(3) The predicted nominal cost of preferred stock ($\hat{R}_p$) may be estimated by determining the current average yield on newly issued preferred stock—industrial or utility as appropriate—which has the same rating as the firm's most recent preferred stock issue.

(4)(A) The predicted nominal cost of common stock ($\hat{R}_e$) is computed with equation 2.

Eq 2 $\quad \hat{R}_e = \hat{R}_f + B \times \bar{R}_m$

where:

$\hat{R}_f$ = The risk free interest rate—the average of the most recent auction rates of U.S. Government 13-week Treasury Bills,
B=The ''beta'' coefficient—the relationship between the excess return on common stock and the excess return on the S&P 500 composite index, and
$\bar{R}_m$ = The mean excess return on the S&P 500 composite index—the mean of the difference between the return on the S&P 500 composite index and the risk free interest rate for the years 1926–1976 as computed by Ibbotson and Sinquefield*(1)*—9.2%

(B) The ''beta'' coefficient is computed with regression analysis techniques. The regression equation is Equation 3.

$$(R_e^t - R_f^t) = A + B(R_m^t - R_f^t) + e^t \qquad \text{Eq. 3}$$

where

$$R_e^t = \frac{PRCC_t - PRCC_{t-1} + (DIVRATE/12)}{PRCC_{t-1}}$$

$R_f t$ = The risk free interest rate in month t—the average of the yields on 13-week treasury bills auctioned in month t.*(2)*
A=A constant which should not be significantly different than zero.

$$R_m^t = \frac{V_{sp,t} - V_{sp,t-1} + D_{sp,t}}{V_{sp,t-1}}, \text{ and}$$

e^t = The error in month t.
$PRCC_t$ = Closing market prices of the firm's common stock at the end of month t fully adjusted for splits and stock dividends.
$DIVRATE_t$ = The sum of the dividends paid in the fiscal year which contain month t.
$V_{sp,t}$ = The market value of ''one share'' of the S&P 500 composite index at the end of month t.
$D_{sp,t}$ = The estimated monthly income received from holding ''one share'' of the S&P 500 in month t.

The regression analysis is done with sixty months of data. The first month (t=1) is sixty months before the month in which the firm's current fiscal year started. The last month (t=60) is the last month of the past fiscal year.

(5) Where the parameters specified above are not obtainable, alternate parameters that closely correspond to those above may be used. This may include substituting a bond yield for nominal cost of preferred stock where the former is not available. Where the capital structure does not consist of any debt, preferred equity, or common equity, an alternate methodology to predict the firm's real after-tax marginal cost of capital may be used.

Example of using alternate parameters that closely correspond to those above are:

(A) In the case of industrials, who do not typically issue preferred stock, the predicted nominal cost of preferred stock ($\hat{R}_P$) can be estimated by determining the current average yield on newly issued industrial bonds which have the same rating as the firm's most recent debt issue.

(B) If necessary, the following assumptions can be made to determine the nominal cost of debt or preferred stock and their flotation costs.

(i) Where a company issued privately placed debt that was not rated, the rating, applied to preferred stock could be used to

determine the cost of debt and its flotation cost.

(ii) Where a company issued privately placed preferred stock that was not rated, the rating applied to debt could be used to determine the cost of preferred stock and its flotation costs.

(iii) In the case where all issues were privately placed, the current average yield on all newly issued debt or preferred could be used to determine the cost of debt or preferred respectively, and an average flotation cost, for debt or preferred, could be used.

(C) *Evidence Requirements.* Copies of this calculation with notations as to the source of the data must be submitted.

FOOTNOTES

(1) Ibbotson, R.E. and R.A. Sinquefield, *Stocks, Bonds, Bills, and Inflation,* Charlottesville, Va.: The Financial Analysts Research Foundation, 1977, cited by Ernst & Whinney, *Costs of Capital and Rates of Return for Industrial Firms and Class A&B Electric Utility Firms,* June 1979, p. 3–8.

(2) As an option, R_f t can be developed with the following equation:

$$R_f{}^t = \frac{365D^t}{360 - ND^t} \times \frac{1}{12}$$

where:

D^t = The average annual yield on three month U.S. Treasury bills reported in the *Survey of Current Business* auctioned in month t—which is reported using the bank discount method.

N = Number of days to maturity.

[46 FR 59920, Dec. 7, 1981]

APPENDIX II TO PART 504—FUEL PRICE COMPUTATION

(a) *Introduction.* This appendix provides the equations and parameters needed to specify the price of the delivered fuels to be used in the cost calculations associated with parts 503 and 504 of these regulations. The delivered price of the fuel to be used to calculate delivered fuel expenses must reflect (1) the price of each fuel at the time of the petition, and (2) the effects of future real price increases for each fuel. The delivered price of an alternate fuel used to calculate delivered fuel expenses must reflect the petitioner's delivered price of the alternate fuel and the effects of real increases in the price of that alternate fuel. Paragraphs (b), (c) and (d) below provide the procedure to: (1) Calculate fuel price and inflation indices; (2) account for projected real increases in fuel prices when planning to burn one or more than one fuel; and (3) account for projected real increases in the price of the alternate fuel. Table II–1 of this appendix (See paragraph (b)) contains example fuel price and inflation indices based on the latest data appearing in the Energy Information Administration's (EIA) *Annual Energy Outlook* (AEO).

The fuel price and inflation indices will change yearly with the publication of the *AEO.* Revisions shall become effective after final publication. However, the relevant set of parameters for a specific petition for exemption will be the set in effect at the time the petition is submitted or the set in effect at the time a decision is rendered, whichever is more favorable to the petitioner.

(b) *Computation of Fuel Price and Inflation Indices.* (1) the Petitioner is responsible for computing the annual fuel price and inflation indices by using Equation II–1 and Equation II–2, respectively. The petitioner may compute the fuel price index specified in Equation II–1 or use his own price index. However, if he uses his own price index, the source or the derivation of the index must be fully documented and be contained in the evidential summary.

EQ II–2 is:

$$PX_i = \frac{P_i}{P_o}$$

where:

PXV_i = The fuel price index for each fuel in year i. P_i = Price of fuel in year i.

P_o = Price of fuel in base year.

EQ II–2 is:

$$IX_i = \frac{GX_i}{GX_o}$$

where:

IX_i = The inflation index in year i.

GX_i = The NIPA GNP price deflator for year i.

GX_o = The NIPA GNP price deflator for the base year.

(2) The parameters to be used in EQ II–1 are the Base Case fuel price projections found in EIA's current *AEO.*

(3) When computing annual inflation indices, the petitioner is to use the Base Case National Macroeconomic Indicators (NIPA GNP Price Deflator) contained in EIA's current *AEO.* If necessary, the petitioner must rebase the projection to the same year used for the fuel price projections. For example, in 1989 *AEO* projects the price deflator in 1982 dollars; this must be rebased to the year in which the petition is filed. The methodology used to rebase the inflation indices must follow standard statistical procedures and must be fully documented within the petition. This index will remain frozen at the last year of the *AEO*'s projection for the remainder of the unit'(s) useful life.

(4) Table II–1 is provided as an example of the application of equations II–1 and II–2. This table contains annual fuel price indices

for distillate oil, residual oil, natural gas, and coal. It also contains annual inflation indices. These values were computed from information contained in Table A3 and Table A11 of EIA's *AEO, 1989*.

TABLE II–1: PRICE AND INFLATION INDICES FOR USE IN THE COST CALCULATIONS

Year	Distillate (DPX)	Residual (RPX)	Natural gas (GPX)	Coal (CPX)	Inflation (IX)
1986	1.0000	1.0000	1.0000	1.0000	1.0000
1987	0.9810	1.2134	0.9508	0.9231	1.0334
1988	0.9429	0.9407	0.8934	0.8876	1.0658
1989	0.8929	0.9328	0.9057	0.8639	1.1054
1990	0.9905	1.0119	0.9221	0.9112	1.1607
1991	1.0381	1.0751	0.9344	0.9172	1.2204
1992	1.0929	1.1344	1.0205	0.9231	1.2836
1993	1.1595	1.2292	1.1148	0.9349	1.3512
1994	1.2286	1.3241	1.1844	0.9467	1.4214
1995	1.3000	1.4150	1.2705	0.9527	1.4960
1996	1.4000	1.5415	1.4016	0.9586	1.5768
1997	1.4762	1.6403	1.4918	0.9704	1.6585
1998	1.5452	1.7273	1.5615	0.9763	1.7410
1999	1.6143	1.7905	1.6475	0.9882	1.8235
2000	1.6690	1.8340	1.7049	0.9941	1.9025
2001	1.6690	I.8340	1.7049	0.9941	1.9025
2002	1.6690	1.8340	1.7049	0.9941	1.9025
2003	1.6690	1.8340	1.7049	0.9941	1.9025
2004	1.6690	1.8340	1.7049	0.9941	1.9025
2005	1.6690	1.8340	1.7049	0.9941	1.9025
2006	1.6690	1.8340	1.7049	0.9941	1.9025
2007	1.6690	1.8340	1.7049	0.9941	1.9025
2008	1.6690	1.8430	1.7049	0.9941	1.9025
2009	1.6690	1.8340	1.7049	0.9941	1.9025
2010	1.6690	1.8340	1.7049	0.9941	1.9025

(C) *Fuel Price Computation*. (1) The delivered price of the proposed fuel to be burned (FPB_i) must reflect the real escalation rate of the proposed fuel, and must be computed with Equation EQ II–3.

EQ-II-3 is: $FPB_i = MPB\ [PX_i]$

where:

FPB_i = Price of the proposed fuel (distillate oil, residual oil, or natural gas) in year i.
MPB = The current delivered market price of the proposed fuel.
PX_i = The fuel price index value in year i, computed with Equation II–1.

or:

(2) When planning to use more than one fuel in the proposed unit(s), the petitioner must use Equation II–1 and Equation II–3 to calculate the annual fuel price of each fuel to be used. The petitioner then must estimate the proportion of each fuel to be burned annually over the useful life of the unit(s). With these proportions and the respective annual fuel prices for each fuel, the petitioner must compute an annual weighted average fuel price. The methodology used to calculate the weighted average fuel price must follow standard statistical procedures and be fully documented within the petition.

(d) *Fuel Price Computation—Alternate Fuel*. The delivered price of alternate fuel (PFA_i) must reflect the real escalation rate of alternate fuel and must be computed with Equation II–4.

Equation II–4 is:

$PFA_i = APF \times apx_i$

where:

PFA = The price of the alternate fuel in year i.
APF^{-i} = The current market price of the alternate fuel f.o.b. the facility).
APX_i = The alternate fuel price index value for year i, computed with Equation II–1.

In most cases the alternate fuel will be coal. The petitioner must use Equation II–1 (paragraph (b)) to compute the escalation rate (APX_i). If an alternate fuel other than coal is proposed the source or the derivation of the index must be fully documented and be contained in the evidential summary.

[54 FR 52896, Dec. 22, 1989]

PART 508 [RESERVED]

PART 516 [RESERVED]